Carter, S.K., J.R. Singhurst, and W.C. Holmes. 2014. *Puccinellia parishii* (Poaceae, Poeae): a genus and species new to Texas. Phytoneuron 2014-58: 1–4. Published 16 June 2014. ISSN 2153 733X

PUCCINELLIA PARISHII (POACEAE, POEAE): A GENUS AND SPECIES NEW TO TEXAS

SHANNON K. CARTER
Department of Biology
Baylor University
Waco, Texas 76706
shannon_carter@baylor.edu

JASON R. SINGHURST
Wildlife Diversity Program
Texas Parks and Wildlife
4200 Smith School Road
Austin, TX 78704
jason.singhurst@tpwd.texas.gov

WALTER C. HOLMES
Department of Biology
Baylor University
Waco, Texas 76706
walter_holmes@baylor.edu

ABSTRACT

Puccinellia parishii is reported as a genus and species new to Texas. The species is here reported from the Chinati Mountains of Presidio County in the Trans-Pecos region of West Texas, greatly extending eastward the previously recorded distribution of the species. The species was previously known from about 30 locales in California, Arizona, New Mexico, Utah, and Colorado. At one time *P. parishii* was proposed for listing as an endangered species, but was removed from the candidate list because of abundance. The species is globally ranked G2G3 (imperiled and very vulnerable to extinction throughout its range) but is ranked S1 (critically imperiled) in Texas.

Puccinellia, commonly known as alkali grass, is a genus found in saline or alkaline environments in the subtropics to Arctic regions of the Northern Hemisphere. With the exception of the southeastern USA and Hawaii, the genus has been reported throughout the USA and Canada. *Puccinellia parishii,* commonly known as Parish's alkali grass or bog alkali grass, occurs in continuously moist alkaline desert springs, or cienegas. This species has been reported from about 30 sites in New Mexico, Arizona, California, Utah, and Colorado (Davis & Consaul 2007; SEINET 2014; BONAP 2014; Colorado Natural Heritage Program 1997+). Here we report the genus and species as the first alkali grass in the state.

Voucher. **Texas**. Presidio Co.: La Bavisa Cienega, Chinati Mountains State Natural Area, 914 m, 26 Mar 2013, *J. Singhurst, M. Warriner*, and *C. Hanks 19334* (BAYLU, US (fragment)). Figure 1.

The specimen found in West Texas extends the distribution of *Puccinellia parishii* by about 500 km to the southeast and indicates that the grass is likely more widespread than currently reported. In 1994, *Puccinellia parishii* was proposed for listing as an endangered species under the Federal Endangered Species Act (U.S. Fish and Wildlife Service 1994) and in 1998 (U.S. Fish and Wildlife Service 1998) was removed from the candidate list when new data demonstrated that the species was more abundant and widespread than previously reported. The reported range extension could prove its status less threatened. The species is globally ranked G2G3 (imperiled and very vulnerable to extinction throughout its range), but is ranked S1 (critically imperiled) in Texas (NatureServe 2014).

Figure 1. *Puccinellia parishii* from Presidio County, Texas (*Singhurst et al. 19334*).

Puccinellia parishii is a dwarf annual grass that grows in single stems or clumps 3–10 cm tall. Culms are cespitose, ascending from a decumbent base. Leaf blades are about 1 mm broad, slightly involute or flat. The inflorescence is 1–8 cm long with a scabrous stalk. Spikelets are narrow and 4–6 mm long with 4–6 florets per spikelet. Spikelet lemma veins are pubescent with tips obtuse to truncate, scarious, and erose. Glumes are 1.5–2 mm long, shorter than the first floret and are acute and 3 nerved. *Puccinellia parishii* is distinguished from *P. distans* and *P. airoides,* both perennial and considered to be similar, by its annual duration and growth habit. Hitchcock (1928) cited the flowering period as from May to July, but the Texas specimen flowered in late March. The earlier flowering time appears related to its occurrence at a relatively lower elevation in a more southern location. The population size and distribution of the species fluctuates greatly according to climatic conditions (Colorado Natural Heritage Program 1997+). Hydrologic alteration is a major threat for this species which requires moist conditions throughout the growing season. It occurs at elevations between 700 and 2220 meters (Colorado Natural Heritage Program 1997+). The distribution of the species, based on USDA, NRCS (2014), SEINET (2014), and BONAP (2014), is shown in Figure 2.

The cienega marsh community is known from trans-Pecos region of west Texas at elevations of 914 to 1829 m (3000–6000 feet). This community occurs in perennially wet areas with seeps and springs supplying permanent but scarcely fluctuating sources of water. Cienega marshes typically occur in wide and gently sloping valleys, where flood velocities are readily dissipated. Geology is characterized by contact between granite and limestone. The soils consist of layers of organic peats and fine-textured silts, which can be several meters deep. These porous soils store water and provide a base flow during drought periods.

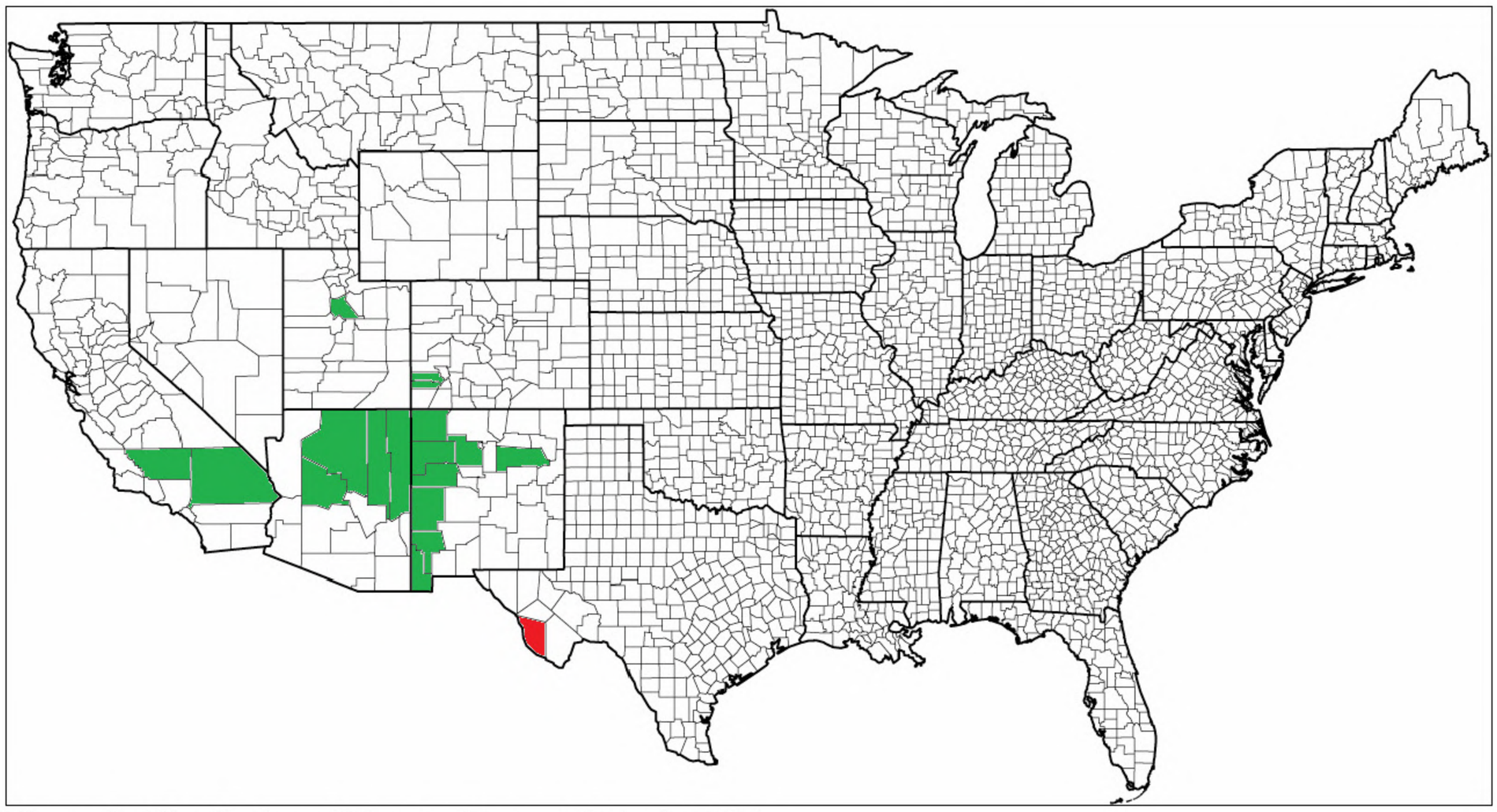

Figure 2. Distribution of *Puccinellia parishii* in the USA.

This wetland (cienega) association is composed of herbaceous vegetation occurring in zones from outer seepy edges to thick mats with open water pools in the center of the isolated wetland. Vegetation is composed of a highly diverse mixture of perennial and annual forbs and gramineous species. Structurally these herbaceous species form a dense mat of growth, typically around 0.5 m in height. Perennial, semi-aquatic sedges and rushes are typically dominant. The most constant and abundant associated herbaceous plants included *Eleocharis rostellata*, *Schoenoplectus americanus*, *Distichlis spicata*, and *Sporobolus texanus*. The more common grasses, sedges, and rushes include *Panicum bulbosum, Polypogon monspeliensis, Muhlenbergia asperifolia, Cyperus laevigatus*, *Eleocharis geniculata*, *Fuirena simplex*, *Fimbristylis annua*, *Sporobolus airoides*, *S. pyramidatus*, *Poa bigelovii*, *Chloris virgata*, *Enneapogon desvauxii*, *Juncus interior*, *J. bufonius*, *Aristida ternipes*, *Setaria leucolepis*, *Bothriochloa laguroides*, and *Cynodon dactylon.* Forbs can be locally common and included such species as *Eustoma exaltatum*, *Epilobium ciliatum*, *Machaeranthera parviflora*, *Eriogonum abertianum*, *Eriogonum rotundifolium*, *Sonchus oleraceus*, *Senecio flaccidus* var. *flaccidus*, *Zeltnera arizonica*, *Lepidium lasiocarpum* var. *wrightii*, *Nicotiana obtusifolia*, *Erigeron tracyi*, *Dasyochloa pulchella*, *Calibrachoa parviflora*, *Cleomella longipes*, *Lythrum californica*, *Chamaesyce micromera*, *Datura wrightii*, *Descurainia pinnata*, *Filago californica*, *Heliotropium curassavicum*, *Draba cuneifolia*, *Ipomopsis havardii*, *Nuttallanthus texanus*, *Oenothera primiveris*, *Oligomeris linifolia*, *Phacelia coerulea*, *Sisymbrium irio, Solanum elaeagnifolium*, *Symphyotrichum expansum*, *S. divaricatum*, *Typha domingensis*, and *Linum* sp. Occasionally woody species may occur within the herbaceous matrix and include *Aloysia gratissima*, *Baccharis salicifolia*, *Cephalanthus occidentalis*, *Gymnosperma glutinosum*, *Populus nigra*, *Populus deltoides* subsp. *wislizenii,* and *Prosopis pubescens*.

The specimen found in West Texas extends the distribution of *Puccinellia parishii* by about 500 km to the southeast and indicates that the grass is likely more widespread than currently reported. In 1994, *Puccinellia parishii* was proposed for listing as an endangered species under the Federal Endangered Species Act (U.S. Fish and Wildlife Service 1994) and in 1998 (U.S. Fish and Wildlife Service 1998) was removed from the candidate list when new data demonstrated that the species was more abundant and widespread than previously reported. The reported range extension could prove

its status less threatened. The species is globally ranked G2G3 (imperiled and very vulnerable to extinction throughout its range) but is ranked S1 (critically imperiled) in Texas (NatureServe 2014).

ACKNOWLEDGEMENTS

The authors thank Robert Soreng, Department of Botany, National Museum of Natural History, Smithsonian Institution, for confirmation of the identity of the plant. We also thank Darrell Vodopich of the Department of Biology, Baylor University for his help with photography. We thank David Riskind and Mark Lockwood with the State Parks Division of Texas Parks and Wildlife Department for access and support with conducting botanical and plant community inventories at Chinati Mountains State Natural Area.

LITERATURE CITED

Davis, J.I. and L.L. Consaul. 2007 *Puccinellia* (Poaceae). Pp. 459–477, in Flora of North America North of Mexico, Vol. 24, Part 1. Oxford Univ. Press, New York and Oxford.

BONAP. 2014. North American Plant Atlas (US county-level species maps). Maps generated from J.T. Kartesz. Floristic Synthesis of North America, Version 1.0. Biota of North America Program (in press). <http://bonap.net/NAPA/Genus/Traditional/County>

Colorado National Heritage Program. 1997+. *Puccinellia parishii*. Colorado Rare Plant Guide. <www.cnhp.colostate.edu>. Updated 22 Feb 2013.

Hitchcock, A.S. 1928. New species of grasses from the United States. Proc. Biol. Soc. Wash. 41: 157–163.

NatureServe. 2014. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <http://explorer.natureserve.org>.

SEINET. 2013. Southwest Environmental Information Network. Managed at Arizona State Univ., Tempe. <http://swbiodiversity.org/seinet/index.php> Accessed 10 Jun 2014.

USDA, NRCS. 2014. Profile for *Puccinellia parishii*. The Plants Database. National Plant Data Team, Greensboro, North Carolina. <http://plants.usda.gov>.

U.S. Fish and Wildlife Service 1994. Proposed endangered status for the plant *Puccinellia parishii* (Parish's alkali grass). Federal Register 59 (59): 14378–14382.

U.S. Fish and Wildlife Service 1998. Endangered and threatened wildlife and plants: withdrawal of the proposed rule to list the plant *Puccinellia parishii* (Parish's alkali grass) as endangered. Federal Register 63(186): 51329–51332.